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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

ALPHONSE, FRITZ

ART UNIT PAPER NUMBER

2675

DATE MAILED: 03/25/2004

18

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/667,807

Applicant(s)

DARTY, MARK A.

Examiner

Fritz Alphonse

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20, 23-25 and 36-87 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 19-25, 36-69, 73-75 and 77-87 is/are rejected.
- 7) ☒ Claim(s) 12-18, 70-72 and 76 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 16.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-10, 19-20, 23-25, 36-37, 42, 46-51, 54-69, 73-75, 78-79, 81-87 are rejected under 35 U.S.C. 102(a) as being anticipated by Hattori (U.S. Pat. No. 6,025,896).

As to claim 1, Hattori (fig. 1) shows a display device comprising: a carrier body that defines at least one channel (note the microcapsule (10) forming a channel), the at least one channel extending in a direction of extension; at least one particle (2a, 2b) disposed in the at least one channel (10); and a controller (Hattori teaches about a controlling electric field) that moves the at least one particle along the direction of extension of the at least one channel (col. 7, lines 22-26).

As to claim 2, Hattori (fig. 1) discloses a display including a first cover (first transparent substrate 14) disposed at a first end of the at least one channel, and a second cover (second transparent substrate 14) disposed at a second end of the at least one channel, the first and second covers preventing the at least one particle from exiting the at least one channel.

As to claims 3-4, Hattori (fig. 1) discloses a display, further including a lens disposed at a surface of a second cover (note in Hattori, the two substrates 14 are used as cover).

As to claim 5, Hattori (fig. 1) discloses a display further including a fluid (note the liquid dispersion medium 4; col. 4, lines 21-25) disposed in the at least one channel (10), and the first and second covers (14) being affixed at the first and second ends of the at least one channel to prevent the fluid from exiting the at least one channel.

As to claims 6-7, Hattori (fig. 1) discloses a display, at least one particle includes multiple particles, and wherein the at least one channel includes multiple channels that define an array (note particles 2a, 2b).

As to claim 8-10, Hattori (fig. 1) discloses a display, wherein at least one particle is a solid, a liquid, and micro-encapsulated (col. 4, lines 58-64).

As to claims 19-20, Hattori (fig. 1) discloses a display, wherein a controller operates pursuant to an analog dot display form such that the at least one particle is movable in analog fashion (Hattori teaches about a controlling electric field) that moves the at least one particle along the direction of extension of the at least one channel (col. 7, lines 22-26). In addition, Hattori teaches that at least one particle is controlled so as to only be stationary relative to the carrier body at first and second ends of the at least one channel (see figs. 1, 8).

As to claims 23-25, method claims 23-25 correspond to apparatus claim 1. Therefore, they are analyzed as previously discussed in claim 1 above.

As to claims 36-37, Hattori (fig. 1) teach about one particle (2b) that provides maximum color reflection when disposed at a second end (top end) of the at least one channel, and provides minimum color reflection when disposed at a first end (bottom end) of the at least one channel; and wherein the minimum color reflection is not appreciably visible to the human eye.

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As to claim 42, Hattori (fig. 1) shows a display, wherein the multiple particles including at least two single-color colorant particles (2a, 2b) in the same channel (10), the at least two single-color colorant particles having different colors.

As to claim 46, the claim has substantially the limitation of claim 7; therefore, it is analyzed as previously discussed in claim 7 above.

As to claim 47, Hattori teaches that each of the multiple channels only housing one particle selected from the group consisting of cyan particles, yellow particles, magenta particles, red particles, green particles, blue particles, black particles and white particles (note that Hattori teaches various dyes can be cited as examples of the coloring matter (colorant) for the polymerization particles; see col. 7, lines 8-9).

As to claims 48-49, Hattori (fig. 1) discloses a display, wherein each of the multiple channels housing at least two particles, and at least two particles including at least two single-color colorant particles that have different colors.

As to claims 50-51, Hattori (figs. 1, 6) discloses a display, wherein the at least one particle being a single-color colorant particle (note particles 2a, 2b). The at least one single-color colorant particle being at least one member selected from the group consisting of at least one black particle (2b) and at least one white particle (2a).

As to claims 54-57, Hattori (figs. 1, 6) discloses a display, wherein at least one particle having a single charge polarity (note the movement of particles fig. 6), and wherein at least one particle including at least two particles having a single charge polarity (col. 4, lines 65 through col. 5 line 2).

As to claims 58-62, Hattori (figs. 1, 6) discloses a display, wherein at least one particle being a single-color colorant particle; the at least one particle having a single

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charge polarity such that the at least one particle is movable along the direction of extension of the at least one channel by application of an electric field. In addition, Hattori teaches at least one particle including at least two single-color colorant particles; the at least two single-color colorant particles having different colors (see figures 6; col. 4, lines 65 through col. 5 line 2).

As to claim 63, Hattori (fig. 1) discloses a display, wherein the at least one particle including at least two particles having a single charge polarity.

As to claim 64, Hattori (fig. 6) shows a display, wherein a first one of the at least two particles having a charge polarity that is different than the charge polarity of a second one of the at least two particles (note the polarity of particles 2a, and 2b) such that the at least two particles can be moved in different directions along the direction of extension of the at least one channel.

As to claim 65, Hattori (fig. 1) shows a display, wherein the at least one channel including multiple channels.

As to claims 66-68, Hattori (fig. 1) discloses a display, at least two of the multiple channels defining a display pixel, and wherein at least one particle including at least two single-color colorant particles, and wherein at least two single-color colorant particles having different colors.

As to claim 69, Hattori (fig. 6) shows a display, wherein each one of the at least two single color colorant particles (2a, 2b) having a single charge polarity such that each one of the at least two single-color colorant particles is independently movable along the direction of extension of each of the at least two of the multiple channels by application of an electric field (see figure 8).

As to claims 73-74, Hattori (fig. 6) shows a method, wherein the moving including moving at least one single-color colorant particle (2b) along the direction of extension of the at least one channel (10) so as to provide contrast change regardless of rotational orientation of the at least one single-color colorant particle; the moving including moving at least one particle having a single-charge polarity along the direction of extension of the at least one channel (figs. 6-8; col. 7, lines 31-40).

As to claim 75, Hattori discloses a display apparatus, comprising: at least one image display pixel that includes: at least one cavity (channel (10) forming a cavity) disposed between a first electrode (14) and a second electrode (14 at the bottom), at least one of the first electrode and the second electrode (14) being transparent (col. 4, lines 16-22), the at least one cavity including at least one single-color colorant particle (note the color colorant particles 2 b) disposed and movable within the at least one cavity, the at least one single-color colorant particle (2 b) having a single charge polarity (col. 4, lines 65 through col. 5 line 2), the at least one cavity achieving a display contrast change independent of at least another cavity forming at least another image display pixel (col. 9, lines 37-39).

As to claims 78-79, Hattori discloses a display apparatus, wherein the at least one single color colorant particle having a coating that prevents at least one of a charge leakage and a particle agglomeration, and wherein the coating including a surfactant (col. 5, lines 5-17).

As to claims 81-83, Hattori (figs. 6, 8) show a display apparatus, wherein the at least one single-color colorant particle includes at least two colorant particles that are each single-color and that each have a single charge polarity (note colorant particles 2a,

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2b with a single charge polarity), the at least two particles being disposed and movable within the same cavity. Hattori teaches that two colorant particles have different colors and different charge polarities (col. 4, lines 65 through col. 5 line 2).

As to claim 84, Hattori (fig. 1) shows a method of providing contrast change at least one channel that forms a display pixel in the display of an image, comprising: moving at least one of at least two single-color (2a, 2b), single charge particles disposed within the at least one channel (10) along a direction of extension of the at least one channel by use of an electric field, a first one of the at least two particles (2a, 2b) having a color (2a) that is different from the color of a second one (2b) of the at least two particles, the first particle (2a) having a charge polarity that is different from the charge polarity of the second particle such that the two single-color (2a, 2b), single charge particles can be moved in different directions along the direction of extension of the at least one channel (note in figures 6 and 8, different movement directions of particles 2a and 2b inside the capsules due to an applied electric field), the at least one channel that forms the display pixel achieving a display contrast change independent of at least one other channel that forming another display pixel (col. 9, lines 37-39).

As to claim 85, Hattori (fig. 1) a method of providing contrast change at least one channel that forms a display pixel in the display of an image, comprising: moving at least one single-color (note in fig. 6, the motion of 2b), single charge particle disposed within the at least one channel along a direction of extension of the at least one channel by use of an electric field (note in figures 6 and 8, different movement directions of particles 2a and 2b inside the capsules due to an applied electric field; see figure 9), the channel having at least one end bounded by a substrate having a different color than a color of the

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at least one single-color, single charge particle (note in Hattori the two different colors (2a, 2b) of the particles), the least one channel that forms the display pixel achieving a display contrast change independent of at least another channel that forms another display pixel (see figure 6).

As to claim 86, the claim has substantially the limitations of claim 85; therefore, they are analyzed as previously discussed in claim 85 above.

As to claim 87, Hattori (fig. 1) shows a method of providing contrast change at least two channels (10) forming a display pixel, comprising: moving at least one single-color (note in fig. 6, the motion of 2b), single charge colorant particle disposed within each of the at least two channels along a direction of extension of each of the at least two channels (note in figures 6 and 8, different movement directions of particles 2a and 2b inside the capsules due to an applied electric field; see figure 9), each channel formed between a first electrode (note transparent electrode 14) and a second electrode (14), at least one of the first electrode and the second electrode being transparent (col. 4, lines 26-28), the first channel of the at least two channels achieving a display contrast change independent of at least a second channel of the at least two channels (note in figure 1, the two channels 10 are independent).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori in view of Palmer (U.S. Pat. No. 6,052,287).

As to claim 11, Hattori does not teach about a carrier body partially made of silicon.

However, in the same field of endeavor, Palmer discloses an integrated circuit chip carrier formed from a silicon substrate (see abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Palmer's integrated circuit chip carrier with Hattori. By doing so the silicon array chip carrier can serve as an additional heat sink or a thermal stress absorber when an IC chip is to be interfaced with a material such as a glass epoxy printed circuit board.

5. Claims 52-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori in view of Sheridan (U.S. Pat. No. 4,126,854).

As to claim 52-53, Hattori does not provide one or two-single color colorant particles having different color. However, this limitation is disclosed by Sheridan (col.3, lines 55-58).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to improve upon the twisting ball panel display, as disclosed by Sheridan. By doing so, the ambient light incident upon the display will provide a visible image.

6. Claims 38-41, 43-45, 77, 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori in view of Albert (U.S. Pat. No. 6,300,932).

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As to claims 38-41, Hattori does not teach about “multiple particles including at least one cyan particle, at least one yellow and at least one magenta particle”.

However, in the same field of endeavor, Albert discloses an electrophoretic display device having multiple particles including one cyan, yellow and magenta particle (col. 8, lines 55-67).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to improve upon the electrophoretic display device, as disclosed by Albert. Doing so would improve the uniformity and quality of the display.

As to claims 43-45, the claims have substantially the limitations of claims 38-39. Therefore, they are analyzed as previously discussed in claims 38-39 above.

As to claims 77 and 80, Hattori does not disclose a dielectric fluid disposed in the at least one cavity of a display apparatus. However, this limitation is clearly disclosed by Albert (col. 15, lines 45-53). See the motivation above.

Allowable Subject Matter

7. Claims 12-18, 70-72, 76 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz Alphonse whose telephone number is (703) 308-8534.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



F. Alphonse

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March 15, 2004



STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600